

REMARKS

Upon entry of the present Preliminary Amendment-A the claims in the application remain claims 1-17, of which claims 1, 4 and 5 are independent.

Telephonic Interview

Initially, applicant would like to thank the Examiner and her supervisor, Samir Ahmed, for the helpful and courteous telephonic interview they conducted with applicant's undersigned representative on 02 August 2007. During the interview the Nagaoka and Fujimura references were discussed, and it was agreed that applicant would file a declaration under 37 CFR 1.132 as discussed by the Examiner in the Office Action for overcoming the rejection relating to the Nagaoka reference, and that applicant would amend the independent claims to clarify the use of different luminances in the reference area and the object areas, a feature not taught by Fujimura. The discussed declaration is enclosed herewith, and claims 1, 4, 5 have been amended in the manner discussed.

Amendments Presented

Claims 1, 4, 5 are amended above by changing the language "a feature in a luminance in said object areas" to --- another feature in a luminance in said object areas --- to more clearly indicate that the feature in a luminance in the object areas is different than the feature in a luminance in the reference area. Dependent claims 3, 7 and 11 are amended to be consistent with the amendments to the independent claims. New claims 15-17 further define that the pedestrian's shape acknowledging unit acknowledges said pedestrian who is in said captured image based on contrast of the feature in the luminance in said reference area and the other feature in the luminance in said object areas.

Applicant respectfully submits that all of the above amendments are fully supported by

the original application, including Figs. 14-20, especially the flowchart of Fig. 17 and the discussion of same, wherein it is explained that the features in the luminances of the reference and object areas are not the same feature. Applicant also respectfully submits that the above amendments do not introduce any new matter into the application.

Response to Office Action

After careful consideration of the objections and rejections set forth in the Office Action, the applicant respectfully submits that as listed herein, all pending claims patentably distinguish over the art of record, and requests allowance of all pending claims, as discussed further below.

Claim Rejections– 35 USC 102(e)

1. In the Office Action (page 2, item 2), the Examiner has rejected claims 1-14 under 35 USC §102(e) as being anticipated by Nagaoka et al. (US 2003/0138133). The Examiner indicates that although the Nagaoka et al. has a common assignee (and common inventors) with the present application, based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 USC §102(e). However, the Examiner also indicates that this rejection under 35 USC §102(e) may be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Relative to the rejection, it is the Examiner’s position that Nagaoka discloses a monitoring device as defined in claim 1, including: a pedestrian’s head area calculating unit which is supposed to correspond to a head of the pedestrian as a reference area (referring to his

Fig. 15 and paragraph [0019]), a pedestrian's over-shoulder area calculating unit which establishes two object areas which are supposed to correspond to over-shoulder areas of said pedestrian on both sides of said reference area (allegedly with reference to the centerline P1 in Fig 15 such that the area 1 is divided into multiple areas); and a pedestrian's shape acknowledging unit which acknowledging said pedestrian who is in said captured image according to a feature in a luminance in said reference areas and a feature in a luminance in said object areas (referring to his paragraph [0123]).

The Examiner applies similar arguments to independent claims 4 and 5, while also referring to paragraph [0053] of Nagaoka for teachings regarding a display device and an alarm determination device. Relative to claims 2, 6, 10, the Examiner asserts that discloses the claimed upwardly offset feature with reference to his Fig. 15. Relative to claims 3, 7, 11, the Examiner asserts that Nagaoka teaches a pedestrian's shoulder area calculating unit which establishes another object area for acknowledging pedestrian's arms and shoulders downwardly to said object areas respectively ... referring to his Fig. 16A and paragraph [0123].

Applicant's Response

A. Initially, pursuant to the Examiner's suggestion, applicant encloses herewith a declaration under 37 CFR 1.132 in which the named inventors of the present application, all of whom are also named inventors in Nagaoka et al. (US 2003/0138133), attest to the fact that any invention disclosed but not claimed in the U.S. Patent Application Publication No. US 2003/0138133 was derived from the inventors named in the present application, and is thus not an invention "by another."

B. Apart from the declaration under 37 CFR 1.132, applicant has carefully considered the

Examiner's rejection and respectfully traverses the same because Nagaoka et al. does not disclose (or make obvious) features of the claimed invention, including basic features of the independent claims. For example, although Nagaoka sets mask AREAS 1-3 in the area of a gray scale object AREA 0, and calculates the mean luminance value and the change/dispersion in each mask area, as discussed at his paragraph [0122], none of the mask AREAS 1-3 correspond to "a pedestrian's over-shoulder area calculating unit" as defined in the independent claims, and correspondingly Nagaoka also fails to disclose a pedestrian's shape acknowledging unit which acknowledges the pedestrian who is in said captured image according to a feature in a luminance in said reference areas and a feature in a luminance in said object areas as defined in the independent claims.

Applicant notes that Nagaoka discloses (as reflected in claim 1 and the abstract of the publication) a device for monitoring around a vehicle and detecting objects present around the vehicle. The disclosed device includes an infrared-ray camera, a binary object extraction unit, a gray scale object extraction unit, and a pedestrian determination unit. The binary object extraction unit extracts a binary object from a gray scale image based on an image captured by the camera. The gray scale object extraction unit extracts a gray scale object, a range of the gray scale object including the binary object, from the gray scale image based on a change in luminance of the gray scale image. The pedestrian determination unit sets a search area, e.g., AREA 1 to AREA 3, in an area including the gray scale object, and recognizes a pedestrian in the gray scale image based on a luminance dispersion in the search area.

In light of Nagaoka's actual disclosure, applicant respectfully submits that Nagaoka does not disclose (or make obvious) the following features of independent claim 1 or similar features

of independent claims 4, 5: “a pedestrian's head area calculating unit which establishes an area which is supposed to correspond to a head of a pedestrian as a reference area”, “a pedestrian's over-shoulder area calculating unit which establishes two object areas which are supposed to correspond to over-shoulder areas of said pedestrian on both sides of said reference area”, and “a pedestrian's shape acknowledging unit which acknowledges said pedestrian who is in said captured image according to a feature in a luminance in said reference area and a feature in a luminance in said object areas”.

In particular, although the Examiner asserts that the “AREA 1” illustrated in Nagaoka’s Fig. 15 corresponds to the claim limitation, “ ... two object areas which are supposed to correspond to over-shoulder areas of said pedestrian on both sides of said reference area”, applicant respectfully disagrees with such assertion because the AREA 1 in Nagaoka is merely an area including the head of a pedestrian and a periphery area including spaces above both shoulders of the pedestrian. The Examiner’s position relating to Nagaoka’s Fig. 15 is contradicted by Nagaoka’s actual disclosure which consistently describes the entire upper area in the image as the single mask AREA 1 including the head. Nagaoka never discloses that he “calculates” two (or any specific) object areas on opposite sides of his center line P1, which are supposed to correspond to over-shoulder areas of a pedestrian, on both sides of a reference/head area. Similarly, Nagaoka never discloses or suggests that any such object areas are offset upwardly from a reference area, as defined in dependent claims 2, 6 and 10.

Based on the foregoing, applicant respectfully submits that the rejection of claims 1-14 under 35 USC §102(e) as being anticipated by Nagaoka et al. is overcome, and applicant respectfully requests that the rejection be reconsidered and withdrawn.

2. In the Office Action (page 6, item 3) the Examiner has further rejected independent claims 1 and 4-5 based on 35 USC §102(c) as being anticipated by Fujimura et al. (US 2006/0177097) With regards to claim 1, it is the Examiner's position that: Fujimura teaches a device for monitoring around a vehicle capable of detecting objects present around said vehicle based on an image captured by at least one infrared camera member (infrared video source that captures an infrared image; Paragraph [0010], lines 5-7) provided with said vehicle, said device comprising a pedestrian's head area calculating unit which establishes an area which is supposed to correspond to a head of said pedestrian as a reference area (candidate detection module that finds a cluster of pixels that represents a human head; [0055], lines 1-5); a pedestrian's over-shoulder area calculating unit which establishes two object areas which are supposed to correspond to over-shoulder areas of said pedestrian on both sides of said reference area (body-ground candidates are a group of pixel cluster that can represent human hands or other detected body parts; [0056], lines 5-7); and a pedestrian's shape acknowledging unit which acknowledges said pedestrian who is in said captured image according to a feature in a luminance in said reference areas and a feature in a luminance in said object areas (the candidate detection module determines if the clip is a body-ground type and if so, then the hotspot is a candidate for verification; [0056], lines 9-13). Further, in regards to claims 4 and 5, it is the Examiner's position that : Fujimura teaches an output display module interleaves detection frames and tracking frames in generating output video for the display [0010], lines 12-14; and Fujimura teaches a system including an audio warning module for generating a warning sound in response to a pedestrian's proximity to the vehicle; [0010], lines 14-17.

Applicant's Response

Upon careful consideration and in light of the above amendments to the independent claims, applicant respectfully traverses the Examiner's rejection because the pedestrian detection and tracking system of Fujimura does not include basic features of the claimed invention as set forth in these claims, i.e., a pedestrian's head area calculating unit which establishes an area which is supposed to correspond to a head of said pedestrian as a *reference area*, a pedestrian's over-shoulder calculating unit which establishes *two object areas which are supposed to correspond to over-shoulder areas of said pedestrian on both sides of said reference area*, and a pedestrian's shape acknowledging unit which acknowledging said pedestrian who is in said captured image according to *a feature in a luminance in said reference area and another feature in a luminance in said object areas*.

In this regard, applicant respectfully submits that the discussion at Fujimura's paragraphs [0055] - [0056] to which the Examiner refers do not, in fact, support the Examiner's position. For example, these paragraphs indicate *alternative determinations*, with paragraph [0055] determining whether a clip is a body center type and paragraph [0056] estimating the candidate size for a body-ground type comparison. Thus, Fujimura does not establish an area which is supposed to correspond to a head of said pedestrian as a *reference area*. Further his paragraph [0056] only very generally refers to various body parts which may be detected, but never discloses or suggests a *pedestrian's over-shoulder calculating unit* which establishes *two object areas which are supposed to correspond to over-shoulder areas of said pedestrian on both sides of said reference area*. Similarly, he does not a pedestrian's shape acknowledging unit which acknowledging said pedestrian who is in said captured image according to a feature in a

luminance in said reference area and another feature in a luminance in said object areas, as now claimed.

Rather, Fujimura's candidate detection module 330 determines whether a pixel cluster or group of pixel clusters are proper human candidates and prepares corresponding image portions for verification identifies candidates (pedestrians) from hotspots [0045 and 0054]. Applicant respectfully submits that the candidate detection merely corresponds to the disadvantageous background art as disclosed by the present application, which does not provide an accurate and clear image from an unclear image. Fujimura merely *estimates* the candidate size for body-center comparison and clips or extracts the grayscale image corresponding to the image from a training database of previously stored grayscale images [0012 and 0054]. Further, Fujimura is indicative of the background art disclosed in the present application wherein it is disclosed that to determine whether an area is a head portion of a pedestrian a ratio of length to width and sufficiency rate of the area are considered. Fujimura at [0055] discloses that one criteria to determine if the clip is a body-center type (a single pixel cluster representing, a human head, or human body profile that meets certain criteria indicative of human features) is by a height/width ratio of the potential candidate such as 3/1.

Essentially, Fujimura discloses a pedestrian detection and tracking system with night vision, wherein the system extracts hot spots by conducting binary conversion based on an infrared image, extracts candidate images that are an indication of pedestrian size (e.g., head, leg or hand of a pedestrian), and determines the extracted size as a body-center-type image or a body-ground-type image. Given that Fujimura only extracts the candidates based on hotspot size (in other words, he does not use luminance information obtained from non-hotspot regions),

Fujimura does not disclose or suggest the discussed features of the claimed invention, but rather teaches away therefrom.

Based on the foregoing, applicant respectfully submits that the rejection of claims 1, 4, and 5 under 35 USC §103(a) as being unpatentable over Fujimura et al. is overcome, and applicant respectfully requests that the rejection be reconsidered and withdrawn.

Other Matters

The additional references cited by the Examiner, Tsuji et al (US 6,327,536) and Imagawa et al (US ,961,466) have been considered by applicant, but it is respectfully submitted that these additional references fail to overcome the deficiencies of the Nagaoka and Fujimura references as discussed above relative to the claimed invention.

New claims 15-17 are believed to be allowable based on the foregoing arguments concerning claims 1, 4, 5 and on the merits of the additional features recited in the new claims.

Conclusion

In conclusion, applicant has overcome the Examiner's rejections of the claims as presented in the Office Action; and moreover, applicant has considered all of the references of record, and it is respectfully submitted that the invention as defined by each of present claims is clearly patentably distinct thereover. The application is now believed to be in condition for allowance, and a notice to this effect is earnestly solicited.

A petition for one-month extension of time is being filed and fee for same is being concurrently paid online via EFS-Web.

If the Examiner is not fully convinced of allowability of all of the claims now in the application, applicant respectfully requests that the Examiner telephonically contact applicant's undersigned representative to expeditiously resolve prosecution of the application.

Favorable reconsideration is respectfully requested.

Respectfully submitted,



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Enclosure